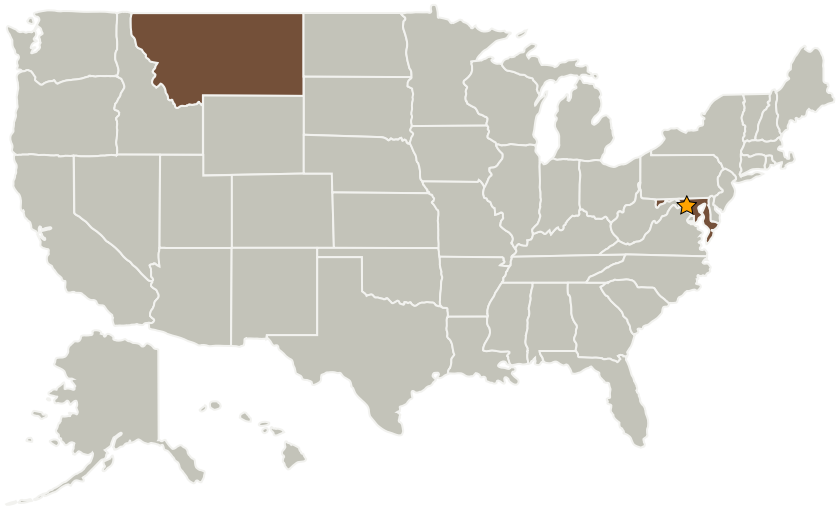
High Power Electro-Optic Modulator for Space-Based Applications, Phase II

Completed Technology Project (2007 - 2009)

Project Introduction

ADVR, Inc. proposes the development of a fiber coupled, high power, electro-optically controlled, space qualified, phase modulator for the NASA Laser Interferometer Space Antenna (LISA). The proposed device will be capable of phase modulating a 1 W or greater, continuous wave optical signal at multi-gigahertz rates at 1064 nm. The key innovation is the use of a waveguide embedded in a non-linear optical material suitable for high optical power handling. The phase modulators used for LISA must be rugged and must perform optimally in a radiation environment over the mission lifetime. To achieve this goal, the proposed phase modulator development will include a fiber-in-fiber-out design that will readily lend itself to future space qualification for mechanical stability of the package and radiation damage resistance of the non-linear optical material.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland
ADVR, Inc.	Supporting Organization	Industry	Bozeman, Montana

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Maryland	Montana

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX05 Communications, Navigation, and Orbital Debris Tracking and Characterization Systems
  - TX05.1 Optical Communications
    - TX05.1.7 Innovative Signal Modulations